

REMARKS

This application pertains to a novel multilayer film useful as a packaging material.

Claims 1-24 are pending.

Claims 1-24 stand rejected under 35 U.S.C. 103(a) as obvious over Reiners et al. (WO00/013866), taking US 7,070,852 as an English language equivalent, in view of Park (WO00/015697), taking US 6,720,362 as an English language equivalent.

The European equivalent of WO 00/13886 (EP -B- 1 117 526) has already been cited in the present application as originally filed.

Reconsideration is respectfully requested.

The present invention relates to a multilayer film which has a foamed polyolefin layer as an outer layer and a packaging material produced therefrom.

Multilayer packaging materials known in the state of the art containing a foamed polyolefin do not always exhibit the desired properties for self-supporting packages (cf. US 2008/020162 A1, [0004]).

For instance EP-B-1 117 526 - which is the European equivalent of PCT application WO 00/13886 cited by the Examiner as closest prior art, discloses combining the foam layer with a compact layer based on a polyolefin also contained in the foam layer while maintaining a specific thickness ratio of these two layers to one another in order to improve the self-supporting properties of packages produced from this packaging material without increasing the total thickness of the packaging material (cf. US 2008/020162 A1, [0005]).

Although this known packaging material may very readily be converted into packages, for example by thermoforming, there is still a requirement - due to ever higher packaging machinery running speeds - to improve the packaging material in such a manner that it permits higher production speeds, i.e. **shorter cycle times**, without causing, for example, irregularities in the wall thickness of the packaging container and **without impairing the mechanical strength or rigidity** and thus the self-supporting properties of the packaging container (cf. US 2008/020162 AI, [0006]).

Such an improvement of the packaging material known in the state of the art was an object of the present invention.

Said object is achieved by providing a multilayered film according to instant claim 1 of the present application, i.e. by

a multilayer film comprising the following sequence of layers:

A) an outer base layer of polyolefin foam containing 2.1 to 20 wt. %, relative to the total weight of the base layer, of at least one nucleating agent,

B) a layer made from 100% of at least one polyolefin of the foam layer A) ,

C) optional layers C)-E),

F) a coupling agent layer,

G) a heat-sealable and/or peelable surface layer,

wherein the total thickness of layers A) and B) is in the range from 0.5 to 2 mm and the thickness of layer B) is in the range from 1/6 to 1/2 of the thickness of layer A).

It has been surprisingly found that the inventive multilayer film is superior over multilayer films of the state of the art, in particular over the multilayer film disclosed in WO 00/13886.

The inventive multilayer film differs from the multilayer film disclosed in WO 00/13886 at least in that:

outer base layer A) based on polyolefin foam contains 2.1 to 20 wt. %, relative to the total weight of the base layer, of at least one nucleating agent, wherein nucleating agents are not mentioned in WO 00/13886 at all.

It was surprisingly found that the multilayer film according to the present invention may be processed on "FFS" machines (form-fill-seal machines) at an elevated production speed excellently and, in comparison to a packaging material having an outer base layer A) of polyolefin foam not containing any nucleating agent, like a multilayer film according to WO 00/13886, **allows up to 10% shorter cycle times** and thus an up to 10% higher output of packaging trays without any impairment of the uniformity of wall thickness (cf. US 2008/020162 A1, [0036]).

Further, it was surprisingly found that, in comparison to the known multilayer film disclosed in WO 00/13886, the inventive multilayer film exhibits an unexpected **improvement in mechanical properties such as in rigidity** measured by the modulus of elasticity in machine direction and in tensile stress (cf. US 2008/020162 A1, [0037]).

This is clearly demonstrated by the experimental data provided in the application text (Example 1 and Comparative Example 1; Table 2).

Table 2 of the present application is summarized again below:

Table 2

Mechanical value	Example 1 (inventive)	Comparative example 1 (according to WO 00/13886)
Modulus of elasticity (machine direction) [MPa]	703	519
Modulus of elasticity (transverse direction) [MPa]	280	280
Tensile stress (machine direction) [MPa]	12.0	9.3
Tensile stress (transverse direction) [MPa]	9.5	7.4
Cycle times [cycles/minute]	9	8

It is clear from Table 2 that the multilayer film according to the present invention exhibits far better mechanical values than a multilayer film according to WO 00/13886 with a foam layer A) not containing any nucleating agent, and, in addition, allows higher, i.e. shorter, cycle times when processed on a "FFS" machine.

These surprising results are in no way suggested by the WO/0015697 reference.

WO 00/15697 relates to perforated foams and discloses that nucleating agents may be used in order to control the cell size of the foam (cf. WO 00/15698, p. 6, lines 18-26).

WO 00/15697 does not disclose any multilayer films having an outer base layer of polyolefin foam.

Further, WO 00/15697 contains no hint that the presence of a nucleating agent in the outer foam layer in a multilayer film according to WO 00/13886 would have any effect on improving the mechanical properties of said film such as rigidity.

Moreover, WO/0015697 contains no hint that the presence of a nucleating agent in the outer foam layer in a multilayer film according to WO 00/13886 with certain

thickness ranges would allow processing said film on a "FFS" machine with higher speed and shorter cycle times.

Such an evaluation is a hindsight evaluation.

Thus, a person skilled in the art would not have combined the teachings of WO 00/13886 and WO/001569 in order to solve the problem discussed above, unless a person had already known the claimed invention.

It is therefore believed that claims 1-24 are now in condition for allowance. Reconsideration of said claims by the Examiner is respectfully requested and the allowance thereof is courteously solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicant requests that this be considered a petition therefor. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fee or credit any excess to Deposit Account No. 14-1263.

Respectfully submitted,
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